

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A LCD device comprising:
 - a first substrate on which pixels are arranged;
 - a second substrate coupled to the first substrate with a sealing member in such a way as to form a gap between the first and second substrates;
 - a liquid-crystal layer formed in the gap, the liquid crystal layer being confined by the sealing member; and
 - spacers arranged in the liquid-crystal layer;
 - wherein the first substrate has a display region for displaying images, the display region being defined to include the pixels;
 - wherein the first substrate has a non-display region formed outside the display region, the non-display region being located between the display region and the sealing member;
 - wherein the spacers are located in a first part of the liquid-crystal layer corresponding to the display region while none of the spacers are located in a second part of the liquid-crystal layer corresponding to the non-display region; and
 - further comprising a depression formed on an inner surface of the first or second substrate;

wherein the depression is located in the second part of the liquid-crystal layer, and the depression constitutes a buffer space which receives extra liquid crystal from the liquid crystal layer; and

wherein the depression is substantially vacant except for the extra liquid crystal.

2-4. (canceled).

5. (previously presented): The device according to claim 1, wherein TFTs are arranged on the first substrate in such a way as to be electrically connected to the respective pixels, and a dielectric layer is formed on the first substrate to cover the TFTs and the pixels;
and wherein the depression is formed in the dielectric layer.

6. (previously presented): The device according to claim 1, wherein a dielectric layer is formed on the second substrate;
and wherein the depression is formed in the dielectric layer.

7. (previously presented): The device according to claim 1, wherein one of the first and second substrates comprises a transparent plate and the depression is formed on an inner surface of the plate.

8. (previously presented): The device according to claim 1, wherein when the non-display region has a width L (μm) and the gap in the display region has an average value d (μm), the depression has a height H satisfying a relationship of

$$H \geq (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]]/L (\mu\text{m}).$$

9. (previously presented): The device according to claim 1, wherein the spacers are pole-shaped and formed on one of the first and second substrates.

10. (previously presented): The device according to claim 1 wherein the depression forms a step between the display region and the non-display region.

11. (withdrawn): A method of forming an LCD device comprising:

providing a first substrate on which pixels are arranged;

providing a second substrate;

wherein the first substrate has a display region for displaying images, which is defined to include the pixels, and a non-display region formed outside the display region;

and wherein the second substrate includes a region to be coupled to the first substrate corresponding to the display region and a region to be coupled to the first substrate corresponding to the non-display region;

providing spacers on an inner surface of at least one of said first and second substrates in an area corresponding to the display region;

providing a sealing member on at least one of said first and second substrates in an area corresponding to the non-display region;

placing the first substrate and the second substrate together so that the inner surfaces of said first and second substrate face each other and contact said sealing member;

compressively deforming the sealing member to approximately the same height as said spacers;

injecting liquid crystal into a gap between the inner surface of said first substrate and the inner surface of said second substrate.

12. (withdrawn): The method of claim 11 wherein the sealing member is compressively deformed by applying a pressing force uniformly over the whole of the first and second substrates.

13. (withdrawn): The method of claim 11 wherein the sealing member is compressively deformed by applying a pressing force using a pair of surface plates.

14. (withdrawn): The method of claim 11 wherein gas in the gap between the first substrate member and the second substrate member is removed to create a pressure difference between the gap and the atmosphere outside the gap and the pressure difference causes the sealing member to be compressively deformed.

15. (withdrawn): The method of claim 11 further comprising applying a pressing force to the first and second substrates after the liquid crystal has been injected into the gap, whereby excess liquid crystal is removed from the gap.

16. (withdrawn): The method of claim 11 further comprising forming a depression on an inner surface of at least one of the first and second substrates in an area corresponding to the non-display region.

17. (withdrawn): The method of claim 11 further comprising providing an in-seal spacer in said sealing member.

18. (withdrawn): A method of forming an LCD device comprising:

providing a first substrate on which pixels are arranged;

providing a second substrate;

wherein the first substrate has a display region, for displaying images, which is defined to include the pixels and a non-display region formed outside the display region;

and wherein the second substrate includes a region to be coupled to the first substrate corresponding to the display region and a region to be coupled to the first substrate corresponding to the non-display region;

providing spacers on an inner surface of at least one of said first and second substrates in an area corresponding to the display region;

providing no spacers on the inner surfaces of the first and second substrates in an area corresponding to the non-display region;

providing a sealing member on at least one of said first and second substrates in an area corresponding to the non-display region;

depositing liquid crystal on the inner surface of one of said first and second substrates;

bringing the first substrate and the second substrate together in a substantially vacuum atmosphere so that inner surfaces of said first and second substrate face each other and contact said sealing member;

removing said first and second substrates from the substantially vacuum atmosphere so that they are subjected to a pressing force by an atmospheric pressure wherein said sealing member is compressed to approximately the same height as the spacers.

19. (withdrawn): The method of claim 18 further comprising forming a depression on an inner surface of at least one of the first and second substrates corresponding to the non-display region.

20. (withdrawn): The method of claim 18 further comprising providing an in-seal spacer in said sealing member.

21. (previously presented): The device according to claim 1, further comprising a dielectric overcoat layer on at least a portion of the second substrate;

wherein at least a portion of the dielectric overcoat layer in the second part of the liquid-crystal layer is selectively etched to remove portions of the dielectric overcoat layer and form the depression.

22. (currently amended): An LCD device comprising:

a first substrate;

pixels disposed on the first substrate;

a second substrate coupled to the first substrate;

a sealing member creating a gap between the first substrate and the second substrate;

a liquid crystal layer disposed in the gap; and

spacers disposed in the liquid crystal layer;

wherein the LCD device comprises a display region for displaying images and a non-display region which does not display images;

wherein the display region includes the pixels;

wherein the non-display region is disposed between the display region and the sealing member;

wherein the spacers are arranged only in the display region and not in the non-display region; and

further comprising a depression which receives excess liquid crystal from the liquid crystal layer so that the gap between the first substrate and the second substrate is substantially uniform in the display region; and

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wherein the depression is substantially vacant except for the excess liquid crystal..

23. (previously presented): The device according to claim 22, wherein when the non-display region has a width L (μm) and the gap in the display region has an average value d (μm), the depression has a height H satisfying a relationship of

$$H \geq (1/2) \times (1000 + L) \times [0.02d + [L \times (0.02d/1000)]]/L (\mu\text{m}).$$